LETTERS TO THE EDITOR.

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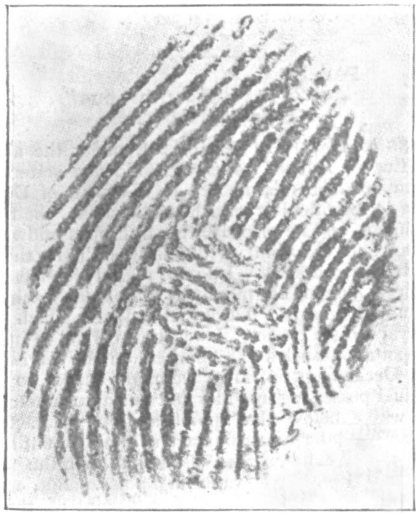
Prints of Scars.

THE accompanying print is sent with a two-fold object. First, for its intrinsic interest in showing how thoroughly and definitely a grafted slice of skin and flesh has established itself under its new conditions, retaining its original characteristics unchanged during thirty years. Secondly, because of its probable interest to surgeons in illustrating the ease and completeness with which a record can be kept of the process and results of the cicatrisation of wounds.

Prints are more clear, more cheap, and more trustworthy than photographs. They are not distorted through perspective, nor blurred owing to differences of focus; they can be taken in any light, and their scale is absolutely correct. They are made by rolling the scarred part on a porcelain pallet or metal slab, that has been covered evenly and very thinly with printer's ink; or, conversely, the pallet and paper are rolled upon the scar. As many duplicate prints can be taken as desired. I have written at so much length about these and alternative methods of printing in my book, "Finger Prints," and elsewhere, that I need say no more about them now. The print sent herewith is a photographic enlargement, being more suitable for rough process-printing than the somewhat minute originals; but one of these is also enclosed. The history of the graft is as follows: J. R. H., who is a solicitor in large practice, when he was twenty-five years old, sliced a piece clean off the thumb of his left hand. He was cutting cardboard with a sharp knife guided by a rule, upon which the thumb pressed, and which it slightly overlapped. The piece that was cut off fell on the table; it was at once picked up, clapped upon the wound, and the thumb was tightly bandaged. After a few days reunion had taken place, and the wound was healed. It then proved that the graft had not been replaced in its original position, but crossways to it, as seen by the papillary ridges in the accompanying print, taken in 1895, thirty years after the accident. FRANCIS GALTON.


Enlarged print of a misplaced graft of flesh on the side of a thumb, thirty years after it was made.

The Cause of an Ice Age.

SIR ROBERT S. BALL appears to admit the correctness of Mr. Culverwell's argument against Croll's astronomical theory of an Ice Age so far as, that "the direct sun-heat received on any parallel at the time of greatest eccentricity is the same as that now received on the parallel not more than three or four degrees north"; and then proceeds to explain, with perfect truth, that "the actual temperature in a region depends, not merely upon the sun-heat there received, but also upon the transference of heat across the boundaries of that region."

Now the causes upon which the transference of heat depend, viz., the prevailing winds and the ocean currents, rest ultimately upon the sun-heat received over the whole globe. The soundness of Mr. Culverwell's argument therefore seems to hinge upon whether the general shift of the isotherms of *sun-heat* three or four degrees southward would be incapable of greatly altering the winds and currents. If this were so, it might be admissible to reason upon the sum total of the local climatal effects at a period of great eccentricity, with the winter in aphelion, from the conditions of temperature as they now exist. If a shift three or four degrees southward would not appreciably alter these currents, I think Mr. Culverwell's argument against Croll's theory a strong one; and to reply effectually to it, it ought to be explained that such a slight shifting of the isotherms of sun-heat would be likely to affect those currents to so great an extent that the then conditions of local temperature would not bear comparison with the present—as, for instance, of Cornwall then with Yorkshire now. O. FISHER.

Harlton, Cambridge, January 17.

Barisal Guns and Similar Sounds.

IN Colonel Godwin-Austen's interesting letter on the Barisal guns (page 247 *ante*), he mentions as suggested sources of these remarkable sounds fireworks (*i.e.*, bombs, cannon), bursting bamboos in jungle-fires, thunder-claps, landslips, the falling of river-banks or sand-banks, and seismic disturbances; but he does not add what seems to me to be a more probable source of the sounds, namely, ball or globular lightning, known to the French as *éclairs en boule*.

It is true, as I stated in my letter to the *Times* in August last, that Faraday, so late as 1838, said:—"That phenomena of balls of fire may appear in the atmosphere I do not deny, but that they have anything to do with the discharge of ordinary electricity, or are at all related to lightning or atmospheric electricity, is much more than doubtful." ("Researches," sec. 1641.)

Snow Harris, however, in his book on "Thunderstorms," 1843, recognises the phenomenon as a case of glow discharge, often terminating in disruptive discharge, as in the case of H.M.S. *Montague*. After this, the reported cases of ball-lightning and the damage caused by their violent explosion are numerous, and some remarkable ones have been described lately in NATURE. When of lower tension, these fire-balls, as they were called by the older physicists, may envelop the person without doing any harm, a striking example of which is given in Shakespeare's *Julius Cæsar*, Act i. Scene iii.

The explosive sounds heard by the Rev. W. S. Smith, while skating on Lough Neagh, may still be due to globular lightning. The dry atmosphere occasioned by frost is highly favourable to the development of atmospheric electricity; and we have still to learn whether these electrical globes will not account for the observed phenomena. C. TOMLINSON.

Highgate, N., January 20.

IN connection with the correspondence on mysterious atmospheric sounds, which originated with Prof. Darwin's communication in the issue of NATURE for October 31 last, I have official sanction for forwarding the following extracts from the meteorological logs of vessels visiting high latitudes.

S.s. *Resolute*, Captain W. Deuchars; 8 p.m., July 30, 1883, in 71° 9′ N., 12° 28′ W.—"Six reports like those of guns heard to the westward, supposed to be caused by electricity, as no ships are thought to be in the vicinity." Wind during the day calm to very light easterly airs; weather foggy; sea smooth, with a very slight south-easterly swell; pressure and temperature as follows:

	Barometer.	Air temperature.		Sea temperature.
		Dry bulb.	Damp bulb.	
	In.	°	°	°
Noon ...	30·08 ...	50·0	48·8 ...	41·5
4 p.m. ...	30·09 ...	42·0	41·8 ...	37·0
8 p.m. ...	30·10 ...	40·8	40·5 ...	37·0
Midnight	30·11 ...	46·5	46·5 ...	35·0

S.s. *Windward*, Captain A. Murray; 4 a.m. June 12, 1883, in 71° N., 7½° W.—"There is a distinct murmur as of a waterfall from the island" [of Jan Mayen]. Calm; weather foggy;

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sea very smooth; barometer 29·83 in., rising; temperature of air 33°, of sea 34°.

S.s. *Labrador*, Captain A. Gray; July 14, 1882, about 56° N., 60° W.—"Saw an iceberg, which collapsed with a thundering squash." Next day, "icebergs all over the place, with an occasional collapsing roar."

It may be thought, perhaps, that the thundering roars of collapsing bergs would be the explanation of the six reports heard by Captain Deuchars; but as he had many years' experience whaling and seal fishing in the ice on both sides of Greenland, he would be well acquainted with the sounds from bergs breaking up, and there must have been, therefore, something peculiar about the "guns" to lead him to suggest an electrical origin.

With reference to M. Van den Broeck's explanation of the expression *mist-poeffers* as *fog-belchings*, not *fog-dissipators*, it may be interesting to add another extract from Captain Deuchars's log: June 15, 1883, in 71° N., 11° W.—"Weather dense fog, with a white bow to south-east, known generally as a *fog-scaffer* or *demolisher*." HY. HARRIES.

Meteorological Office, January 17.

WITH reference to the letters on this subject which have recently appeared in your pages, and more especially to the communication of my friend Rev. W. S. Smith, relative to Lough Neagh, the following extract from my notes may be of interest: "August 27, 1886.—While standing with Mr. S. A. Stewart in a recently-mown meadow, near Portmore Lough, on the eastern side of Lough Neagh, our attention was attracted by a rumbling noise. The day was very fine and warm, and dead calm, not a leaf stirring, and a few very light clouds were in the sky. The noise was like a short distant peal of thunder, but sounded faint rather than distant. While we watched, a whirlwind suddenly appeared in the direction whence the sounds had come [the north], and at a distance of about a hundred yards from us. A quantity of loose hay was instantly whirled upward to a height of about 100 feet, and, after floating about in circles, slowly settled down. A haycock at the spot was much disturbed, and presented the appearance of having endured a gale of wind. The time between the rumbling sound (which closely resembled the distant report of a cannon) and the appearance of the whirlwind was about half a minute, and the whirlwind lasted somewhat over a minute."

In W. H. Patterson's "Glossary of Words of Antrim and Down," we find the following: "Water Guns.—Sounds as of gunshots, said to be heard around the shores of Lough Neagh by persons sailing on the lake. The cause of the sounds, which are generally heard in fine weather, has not been explained." There is no doubt that the sound we heard was the mysterious "water guns," and there is also little doubt that the noise and the appearance of the whirlwind were closely connected.

R. LLOYD PRAEGER.

IN connection with the recent correspondence upon "Remarkable Sounds," the following quotation may be interesting. It occurs as a footnote in a paper by Prof. S. A. Forbes, of Illinois, upon the "Aquatic Invertebrate Fauna of the Yellowstone National Park, &c.," published in the *Bulletin* of the U.S. Fish Commission for 1891 (Washington, 1893), p. 215.

"Here we first heard, while out on the lake [Shoshone Lake, Yellowstone National Park] in the bright still morning, the mysterious aerial sound for which this region is noted. It put me in mind of the vibrating clang of a harp, lightly and rapidly touched, high up above the tree-tops, or the sound of many telegraph wires swinging regularly and rapidly in the wind, or, more rarely, of faintly-heard voices answering each other overhead. It begins softly in the remote distance, draws rapidly near with louder and louder throbs of sound, and dies away in the opposite distance; or it may seem to wander irregularly about, the whole passage lasting from a few seconds to half a minute or more. We heard it repeatedly and very distinctly here and at Yellowstone Lake, most frequently at the latter place. It is usually noticed on still, bright mornings not long after sunrise, and it is always louder at this time of day; but I heard it clearly, though faintly, once at noon, when a stiff breeze was blowing. No scientific explanation of this really bewitching phenomenon has ever been published, although it has been several times referred to by travellers, who have ventured various crude guesses at its cause, varying from that commonest catch-all of the ignorant, 'electricity,' to the whistling of the wings of ducks and the noise of the 'steamboat geyser.' It seems to me to belong to the class of aerial echoes, but even on that supposition I cannot account for the origin of the sound." D. J. SCOURFIELD.

Leytonstone, January 20.

IT may be worth while to put on record the following statements of the distances at which the firing of guns have been heard. They were related to me by the late Prof. C. J. Harris, of Washington, and Lee University, Lexington, Virginia, who, in speaking of the distances at which sounds could be heard, said that during "The War"—the Civil War of 1861-65—he had frequently heard the firing of the guns in battles taking place many miles from Lexington; and so distinct were the reports, that it was easy to distinguish between light and heavy artillery. In particular, I remember his saying that the sound of the cannonading at the Battle of Malvern Hill was distinctly heard at Lexington. Malvern Hill is about 123 miles "as the crow flies" from Lexington. At this battle gunboats were used by the Federals, and the reports of the heavy guns on the boats could be easily distinguished.

He also said that during the Battle of Manassas—or, as it is also called, Bull Run—the cannonading was heard at Lexington. The battle-field is about 125 miles from Lexington. These distances have been furnished me by the Assistant Superintendent of the U.S. Coast and Geodetic Survey, and are accurate within a mile or two. W. G. BROWN.

Washington, D.C., U.S.A., January 3.

The Place of "Pithecanthropus" on the Genealogical Tree.

WRITING to NATURE (January 16), under the above heading, Dr. Eugene Dubois makes the following statement: "In Prof. Cunningham's tree, figured in NATURE of December 5, p. 116, he regards the left branch as all human, the right one as entirely simian, and he placed Pithecanthropus midway between recent Man and the point of divarication." In this assertion there are two inaccuracies. I do not regard the left branch as being entirely human, but merely as representing a hypothetical line of human descent. During the debate which took place at the Royal Dublin Society, I was most careful to insist that at a certain point on such a line (marked on the diagram by a ×, NATURE, December 5, p. 116), we might expect to meet with an individual possessing ape-like and human characters in equal degree; whilst below that point ape-like characters would predominate, and the human characters diminish until, probably, before we came to the junction of the line with the main stem, the latter had reached a vanishing point. But, again, I did not place Pithecanthropus on the mid-point of the line, but much lower down, as may be seen by a reference to the diagram itself, where the upper mark of interrogation (?) indicates the place which I assigned to the fossil cranium.

I would wish to add that my diagram was not drawn with the view of elaborating in any detail a genealogical tree of Man and the Anthropoid apes, but simply for the purpose of eliciting from Dr. Dubois his views regarding the place he wished to assign to Pithecanthropus in relation to Man on the one hand, and the existing Anthropoid apes on the other.

It seemed to me that a definite statement from Dr. Dubois on this point was desirable, seeing that I considered that the title he had given to his memoir was apt to lead to misconception. D. J. CUNNINGHAM.

THE CHEMICAL SOCIETY'S HELMHOLTZ MEMORIAL LECTURE.

IN his Helmholtz memorial lecture, delivered last Thursday, Prof. G. F. Fitzgerald gave an able exposition and development of those branches of the work of the late Prof. Helmholtz which intimately affect chemistry, and at the same time made an important contribution to several much-vexed questions of higher chemical physics. A brief account of the chief points of the lecture is given in the following abstract.

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